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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/555,816
Filing Date: October 10, 2000
Appellant(s): NORDSTROM ET AL.

MAILED

SEP 2 0 2007

Technology Center 2100

Paul J. Ditmyer (U.S. Reg. No. 40,455)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed June 11, 2007, appealing from the Office action mailed July 14, 2004.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4539684	Kloker	9-1985
6289102	Ueda et al.	9-2001
4742543	Frederiksen	5-1988
WIPO 9503656 A1	Isaksson et al.	2-1995

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

Claims 24-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kloker (U.S. Patent No. 4,539,684) in view of Isaksson et al. (WIPO 9503656 A1).

Regarding claims 24, 32, and 37, Kloker teaches a method/system/scrambler of

scrambling user data prior to transmission, the method comprising:

- Combining user data with frame synchronization data to define scrambled data

  (fig. 3, ref. num 26, 28, and "Input Data Sequence"); and

- Transmitting the scrambled data to the receiver (col. 3, line 57 through col. 4, line

  46).

Kloker does not teach in a multi-carrier transmission system in which

synchronization frame data is periodically transmitted from a transmitter to a receiver to

measure transmission channel characteristics.

Isaksson et al. teaches in a multi-carrier transmission system in which

synchronization frame data is periodically transmitted from a transmitter to a receiver to

measure transmission channel characteristics (claim 1 and abstract).

Regarding <u>claims 28, 33, and 41</u>, <u>Kloker</u> teaches a method/system/descrambler

of descrambling user data prior to transmission, the method comprising:

- Receiving the scrambled data from the transmitter (col. 3, line 57 through col. 4,

  line 46); and

- Combining the scrambled data with frame synchronization data (fig. 4, ref. num

  42, 46, and 48).

<u>Kloker</u> does not teach in a multi-carrier transmission system in which

synchronization frame data is periodically transmitted from a transmitter to a receiver to

measure transmission channel characteristics.

<u>Isaksson et al.</u> teaches in a multi-carrier transmission system in which

synchronization frame data is periodically transmitted from a transmitter to a receiver to

measure transmission channel characteristics (claim 1 and abstract).

It would have been obvious to one of ordinary skill in the art, at the time the

invention was made, to combine a multi-carrier transmission system in which

synchronization frame data is periodically transmitted from a transmitter to a receiver to

measure transmission channel characteristics, as taught by <u>Isaksson et al.</u>, with the

method/system/scrambler/descrambler of <u>Kloker</u>. It would have been obvious for such

modifications because the system of Kloker reduces the transmission bit stream by

combining the user data bits with the synchronization bits. When you combine that with

the multi-carrier transmission system of Isaksson et al., one in the art would be

motivated to provide faster data transmission by reducing the transmission bit stream of

the data provided to customers.

Regarding claims 25, 29, 38, and 42, the combination of Kloker in view of

Isaksson et al. teaches the combiner means has a XOR function (see fig. 3, ref. num 28

of Kloker).

Regarding claims 26, 30, 39, and 43, the combination of Kloker in view of

Isaksson et al. teaches the frame synchronization data is pseudo random (see page 5,

lines 23-35 of Isaksson et al.).

Regarding claims 27, 31, 40, and 44, the examiner takes Official Notice that the

combiner means are adapted to combine said user data with the two most significant

bits of a synchronization frame.

It would have been obvious to one of ordinary skill in the art, at the time the

invention was made, to combine said combiner means is adapted to combine said user

data with the two most significant bits of a synchronization frame with the

method/system/scrambler/descrambler of Kloker/Isaksson et al. It would have been

obvious for such modifications because correlated data, data that has similar (or near

similar) values for several transmission periods, would change the most by scrambling

the two most significant bits. The difference between two binary '8' (**00**001000), for example, look quite different when EXCLUSIVE-ORed with the two most significant bits, the first binary '8' may become a binary '72' (**01**001000) and the second binary '8' may become a binary '136' (**10**001000). The opposite would be to EXCLUSIVE-OR the least significant bits. Again, the first binary '8' may become a binary '10' (000010**10**) and the second binary '8' may become a binary '11' (000010**11**). In summary, EXCLUSIVE-ORing the two most significant bits provides the most amount of uncorrelated data without having to EXCLUSIVE-OR the whole data string, which takes extra processing time in an already processor extensive procedure.

Regarding <u>claims 34 and 45</u>, the examiner takes Official Notice that the multi-carrier transmission system employs DMT.

Digital Multi Tone is commonly used in DSL to break up a telephone (tone) signal into smaller pieces and send them smaller pieces at the same time over different frequencies. This is very similar to Orthogonal Frequency Division Multiplexing, which breaks up a radio signal into smaller pieces for transmission at different frequencies.

Regarding <u>claims 35 and 46</u>, the combination of <u>Kloker</u> in view of <u>Isaksson et al.</u> teaches the multi-carrier transmission system employs OFDM (see page 3, line 29 through page 4, line 14 of Isaksson et al.).

Regarding claim 36, the combination of Kloker in view of Isaksson et al. teaches

a means for transmitting frame synchronization data from said data scrambler to said

data descrambler (see claim 1 and abstract of Isaksson et al.).

(10) Response to Argument

Appellant argues:

a.   Kloker does not teach a scrambler or descrambler for use in a multi-carrier

transmission system (page 7, first paragraph of appeal brief).

Regarding argument (a), examiner disagrees with appellant. Examiner agrees

that Kloker is deficient in showing a multi-carrier transmission system, as argued by

appellants. However, when looking at the language of the claim, all that is required to

teach the first independent claim is a scrambler comprising combining user data with

frame synchronization data. The remainder of language of the claim is merely an

intended use of the claim, i.e., that the scrambler is **for use** in a multi-carrier

transmission system. Kloker teaches a scrambler that combines user data with frame

synchronization data, as shown in figure 3, wherein the INPUT DATA SEQUENCE is

the user data and the AUTOSYNCHRONIZATION SEQUENCE is the frame

synchronization data. Additionally, reference number 28 represents the combiner.

b.   Isaksson et al. does not teach a scrambler or descrambler as a source of

pseudo-random data (page 7, last paragraph of appeal brief).

Regarding argument (b), examiner disagrees with appellant. Isaksson et al. was

not cited for showing a scrambler or descrambler as a source of pseudo-random data.

Isaksson et al. was cited merely to show the embodiment of the claimed invention, that is, a multi-carrier transmission system. As explained above, the multi-carrier transmission system is simply an intended use of the independent claim.

     c.   The combination of references does not teach the two most significant bits of the frame synchronization data are combined with the user data because the examiner used hindsight reasoning and official notice (page 8, last paragraph through page 10, first paragraph of appeal brief).

     Regarding argument (c), examiner disagrees with appellant. Appellant is requesting the examiner to show evidence that the official notice taken above has support in a prior art reference, according to MPEP 2144.03(c). In response to this request, examiner would like to show two different references, both filed prior to the instant application, that show it to be obvious to scramble the most significant bits to provide random numbers. These two references are shown merely to prove it obvious, and to provide support for, scrambling only the most significant bits using an exclusive-or, as laid out in MPEP 2144.03(c). U.S. Patent 6,289,102, to Ueda et al., shows in figure 12 and column 16, lines 3-22, that an exclusive-or is placed on the most significant bits to generate a random number. Additionally, U.S. Patent 4,742,543 to Frederiksen, shows at column 17, lines 8-21, that the most significant bits of the samples are scrambled by the exclusive-or gates.
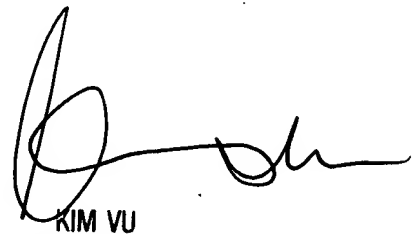
(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the

Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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